

December 2008

# UDOT Maintenance Newsletter

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*By Vincent Liu, Methods Engineer*

## Pavement Striping Visibility in Wet-Night Conditions

**History** - Pavement striping visibility in wet conditions has always been a problem for motorists. The problem is much worse at night, when water film on the pavement surface reflects light in random directions rather than back to the driver. In consideration of active winter maintenance activities in Utah, the thickness of pavement markings above the road surface is limited, because above ground markers cannot be used. This creates a very difficult time for all motorists, and particularly older drivers, to see pavement markings under wet-night road conditions.

**Progress** - The installation of striping for this study was completed this summer. The first field retroreflectivity measurement was performed in October by USU. The next measurement will be in the spring. We will continue to measure, monitor and analyze this study in the coming two years.



*I215, grooved-in paint with wet-night materials*



*Performing ASTM Wet Test by USU Students*



*"Having the spreader properly calibrated to apply the correct amount of product will reduce wasting of materials for snow removal operations."*

## New Calibration Scales

With budgets tight, there is a push for efficiency in operations. Maintenance Planning has purchased seven new scales to speed up and improve the calibration of spreaders. Having the spreader properly calibrated to apply the correct amount of product will reduce wasting of materials for snow removal operations. Applying the correct amount of product will improve the effectiveness

of the application. The Trainer in each Region/District has a scale to help with spreader calibration. Pictured below are Curtis Sanchez and employees

*of Region-2 Rex Black, Gary Black and Billy Gallegos of station 231, calibrating spreaders with one of the new scales.*



## Two New UDOT Renewable Energy Systems

### Wanship Maintenance Station:

A 3.8-kilowatt solar photovoltaic (PV) system went on line September 4, 2008 at UDOT's Wanship maintenance station. This system consisted of a single grid tied inverter and 20 Evergreen solar panels. The system was installed in 2 days on a new metal roof. It is expected that this system will provide approximately 15% of the shed's electrical needs. UDOT was able to get a \$6,300 grant from Rocky Mountain Power to help offset the cost of the system.

### Moab Resident Engineers Office:

The Moab construction office now has a 5.9-kilowatt solar photovoltaic system on its roof. The system consists of 30 solar panels and a single grid-tied inverter. This system was the fourth renewable energy system that UDOT has installed. The Moab project went on line exactly one year after the Murray project, which was the first renewable energy project for a UDOT facility. The solar panels were mounted in a summer orientation to help offset the peak air conditioning loads during the summer months.



*Wanship Maintenance Station*



*Moab Resident Engineers Office*

## Renewable Energy Systems *Continued from page 2*

### **Future Projects:**

Several sites are currently being studied for renewable energy projects. Some future wind projects being considered include Monticello and Long Valley Junction maintenance stations. Possible solar projects include Salt Lake Metro, Clearfield and Centerville Stations. Project selection will be based on available funding, both internal and grants from utilities.

In addition to renewable energy projects, UDOT is working with State DFCM to study all UDOT owned

facilities for potential energy efficiency upgrades. These types of projects will range from lighting upgrades, insulation, and windows to used oil burners.

Recent improvements to LED technology may also lead to a demonstration project on freeway lighting. Plans are being evaluated for upgrading sections of lighting to LED technology and providing a renewable energy source capable of producing the power needs of the lights.



*Moab Resident Engineers Office*

## Winter Driving Tips From The Utah DOT

Utah weather conditions can change rapidly, making planning ahead for winter driving a necessity. According to the Utah Department of Transportation, a little prep time before the first winter weather event can save time, money and lives in the months to come.

Winterize your vehicle now, before winter weather threatens. To minimize the possibility of a breakdown, winterize your vehicle and get it tuned up. Check, or have a mechanic check, your vehicle's wipers, hoses, battery, alternator, belts, tires, brakes, exhaust

system, lights, and fluid levels. Make sure your vehicle's heater and defroster are in good working order. A breakdown is bad on a good day, but can be dangerous on a bad weather day. Get your emergency survival kit and supplies prepared and in your vehicle. Basic survival kits should be placed in each vehicle. When planning a long commute or any long trips in the winter, it might seem like a lot of stuff, but in the event you're stranded during a winter storm these items could mean the difference between life and death.

The kit should contain a blanket or sleeping bag; high-energy nonperishable food; water; flashlight and extra batteries; matches or a lighter; candles; warm gloves; small first-aid kit; hat or stocking cap; insulated footwear; and winter coat. The kit should contain enough supplies for the number of passengers in the vehicle. Other winter travel supplies should include a snow shovel; scraper and snow brush; sand or strips of carpet for traction; flares/reflectors; tool kit; jumper cables; and a good spare tire, lug wrench and jack.

As always, drivers should use basic safe driving habits at any time of year -- buckle up, drive alert and sober, and operate your vehicle at a safe and legal speed. Special precautions need to be followed when winter weather causes ice or snow on Utah roadways, including reducing your speed for conditions. Don't turn your family car into an off-road vehicle by driving too fast for conditions. For more information about the Utah DOT's snow and ice control program contact Lynn Bernhard of the Maintenance Division at 201-964-4597



## OMS Goes Live

*By Richard Clarke, Engineer For Maintenance*

After almost 5 years, tremendous effort and many hurdles, the new Operations Management System (OMS) is up and running. OMS was a commercial “off the shelf” software package that was purchased from *AgileAssets, Inc.*, of Austin, Texas and customized and configured to fit UDOT’s business needs. The launch of OMS marks the beginning of the next generation of maintenance management software and presents UDOT with opportunities for more effective and efficient ways to accomplish highway maintenance activities.

One of the key aspects to a successful implementation was the training effort that was carried out by UDOT employees from around the state. UDOT used a “train the trainer” approach to give approximately 28 key employees an in-depth training on the software and how to make the transition from the old MMS program.

Over this past summer, these 28 UDOT trainers attended three weeks of dedicated training and practice, conducted by the AgileAssets Staff. Approximately 2 months before the “Go-Live” date of November 15<sup>th</sup>, the trainers took to the field to pass along their knowledge to the end users. Users were able to practice on a test system loaded with real data. The extra effort helped make for a smooth transition by developing program champions early and creating helpful resources statewide. As with all large software conversion projects, there have been issues, but the transition was considered “relatively quiet” by the project team.

The new program is Oracle-based, and can therefore more easily integrate with other Department systems such as ePM, Pontis and others. This increased flexibility will no doubt improve the process by which UDOT plans, designs, constructs and ultimately maintains the highway network.

The new system has a much closer integration with the FINET and payroll systems. Additional features such as GIS interfaces, mobile solutions using GPS and web access will ultimately change the way we do business as a highway department.

The OMS project was led by Mike Marz and Tim Ularich. Mike and Tim would like to thank all those who participated in the development and training effort of the OMS system. They also welcome any comments or input that can help shape the development of the system to better meet your needs.

To share your comments, or to get additional information on the OMS, contact Mike (801) 965-4469 or [mmarz@utah.gov](mailto:mmarz@utah.gov) Or Tim (801) 965-4468 or [timularich@utah.gov](mailto:timularich@utah.gov).

## Rehabilitating Failing Culverts

### Using Segmental Liners

#### Culvert liners eliminate costly Excavation and replacement

Culvert conditions can easily become an out-of-sight, out-of-mind issue. Over the past few decades, many of UDOT's existing culverts have exhausted their design life, leaving deteriorated skeletons beneath our roads. Excavating and replacing these culverts disrupts traffic and requires costly pavement repairs. The deeper a culvert is buried beneath the road, the more expensive excavation can become.

In response, UDOT has developed a new program to rapidly restore culverts using segmental liners. This concept has proven very successful. Often, there is minimal, if any, impact to the road and traffic. There is no special equipment or training necessary. Segmental liners also provide the structural integrity necessary to withstand pressures previously born by the original culvert. This allows for a true full rehabilitation. Our maintenance crews have taken the initiative to install segmental liners in several locations across the state and future installations are anticipated.



UDOT has produced a [seven-minute video](#) and a [field manual](#) to implement statewide training. These resources have proven useful for our own maintenance crews as well as other DOT's and local municipalities.

Segmental liners are saving an average cost of \$35,000 per culvert with additional timesavings to our traveling public. Many thanks to our maintenance crews for their hard work and innovation.

For more information, contact:

[Tim Ularich](#)

Central Maintenance

[Kelly Burns](#)

Central Hydraulics

## Fact Sheet

### Utah DOT Winter Operations Facts

#### Infrastructure

Lane miles	16,370
Center-line miles of Interstate Highways	938

#### Staff, Materials and Equipment for 2008-2009 Snow Season

Road plows	508
Wing attachments for plows	87
Salt/Sand Spreaders	521*
Full-time Maintenance employees on the snow plan	481
Construction staff who plow snow	85

\*Some spreaders are mounted on trucks other than ten-wheel snowplows

#### Average Snowfall

Per year	2" in Utah's Dixie to 450" in Wasatch Mountains – 600"+ at Alta in a good snow year
Number of storm events per year	25 to 40
Days Saint George Station pushed snow	10 in winter of 2007-2008
Days Logan Summit Station pushed snow	147 in winter of 2007-2008
Tons of salt used in an average year	224,000(based on a ten-year average)
Tons of salt used in an average year	211,000 (based on last three-years average)

Deslicking Grit Used, 2007 - 2008	117,000 tons
Liquid Chemicals Used (Salt Brine), 2007 - 2008	1,820,000 gallons

#### Costs and Budgets

2007-2008 Winter Operations Spending	\$25,042,000
2008-2009 Winter Operations Budget	\$22,253,000

#### Key Points

- Fuel Costs hurt. UDOT used 3,200,000 gallons of diesel fuel last year.
- Legacy, I-15NOW, Carpool lanes in Davis County add more roads to plow.
- High volume commuter roads and Interstates will continue to be our focus for snow removal.
- New style snowplow blade should provide cleaner roads.
- Will continue using aggressive road weather forecast team.
- Snow plow simulator has reduced snowplow accidents and has reduced fuel use.
- Use non-plow vehicles for winter operations by modifying them.
- Special crews for avalanche prediction, control, and monitoring.
- Longest plow route – 92 miles one-way.
- And our **SECRET** weapon! The **SNOW SWITCH**

